



**ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
SEPTEMBER 6, 2001 - 9:00 A.M.
EXECUTIVE CONFERENCE ROOM**

Present:	C. T. Maki C. Roberts J. W. Reincke S. Bower	G. D. Taylor P. F. Miller T. Fudaly	J. D. Culp J. D. O'Doherty R. S. Welke (T. E. Davies)
Guests:	M. VanPortFleet K. Kennedy	S. Beck J. T. LaVoy	C. Libiran V. Zokvic

OLD BUSINESS

1. Approval of the Minutes of the August 9, 2001, Meeting - C. T. Maki

Minutes of the August 9, 2001, meeting were approved.

NEW BUSINESS

1. Design Publications - C. Libiran

A. Bridge Design Manual

Revisions to the Bridge Design Manual included two new items: galvanic anodes to provide sacrificial corrosion protection for rebar in the deck; and fiber reinforced polymer warps for pier column repair. Both are low cost items that improve the product.

ACTION: EOC approves the revisions to the manual (for distribution).

B. Bridge Design Guides

Minor technical revisions were made to the Bridge Design Guides with little or no effect on design and construction costs.

ACTION: EOC approves the revisions for distribution.

2. Pipe Specifications - M. VanPortFleet

EOC approved several specification changes to culvert and sewer specifications that alter the current specifications for plastic and corrugated metal pipe. The approved changes are attached to these minutes and include several pilot programs to monitor the installation to ensure proper material and installation practices have been used.

EOC also requests the Pipe Selection Task Group develop a special provision to identify the size and shape of mandrels required for testing plastic pipe.

3. **Pavement Selection, M-84 Reconstruction: CS 73033 and 09011/JN 31804 and 48271 - Bituminous Pavement - K. Kennedy**

The reconstruction alternates considered were a flexible bituminous pavement (Alternate 1) and a jointed reinforced concrete pavement (Alternate 2).

A life cycle cost analysis was performed and Alternate 1 was approved based on having the lowest Equivalent Uniform Annual Cost. The pavement design and cost analysis summary are as follows:

Alternate 1A (47.5 Percent of the Project) Reconstruct: Bituminous Pavement (Boulevard)

38mm	Bituminous Mix 5E3, Top Course (Mainline)
50mm	Bituminous Mix 4E3, Leveling Course (Mainline)
76mm	Bituminous Mix 3E3, Base Course (Mainline)
140mm	Bituminous Mix 4C and 3C (Shoulders)
160mm	Aggregate Base (184mm Shoulders)
460mm	Sand Subbase
150mm	Subbase Underdrains
784mm	Total Thickness

Alternate 1B (16 Percent of the Project) Reconstruct: Bituminous Pavement (Five Lane Section)

38mm	Bituminous Mix 5E3, Top Course
50mm	Bituminous Mix 4E3, Leveling Course
76mm	Bituminous Mix, 3E3, Base Course
160mm	Aggregate Base
460mm	Sand Subbase
150mm	Subbase Underdrains
784mm	Total Thickness

Alternate 1C (36.5 Percent of the Project) Reconstruct: Bituminous Pavement (Three Lane Section)

38mm	Bituminous Mix 5E3, Top Course
50mm	Bituminous Mix 4E3, Leveling Course
76mm	Bituminous Mix 3E3, Base Course
160mm	Aggregate Base
460mm	Sand Subbase
150mm	Subbase Underdrains
784mm	Total Thickness

Present Value Initial Construction Costs \$250,703/directional kilometer
(Composite Cost of 1A, 1B, and 1C)
Present Value Initial User Costs \$40,954/directional kilometer
Present Value Maintenance Costs \$53,550/directional kilometer

Equivalent Uniform Annual Cost \$22,072/directional kilometer

(Signed Copy on File at C&T)

Jon W. Reincke, Secretary
Engineering Operations Committee

JWR:kat

Attachment

cc: EOC Members
Region Engineers
G. J. Rosine R. J. Risser, Jr. (MCPA) L. Stornant T. L. Nelson
R. J. Lippert, Jr. A. C. Milo (MRBA) J. Ruszkowski R. D. Till
D. L. Smiley J. Becsey (MAPA) C. Libiran M. Frierson
M. Nystrom (AUC) D. Hollingsworth (MCA) G. J. Bukoski C. W. Whiteside
M. Newman (MAA) J. Steele (FHWA) K. Rothwell T. E. Myers
J. Murner (MRPA) K. Peters T. Phillips

Proposed Modifications to Culvert and Sewer Specifications

As approved by the Engineering Operations Committee
September 6, 2001

1. Granular Fill Above Plastic Pipe

Change the current specifications to require a minimum cover elevation of 12 inches for all pipe material types. The Pipe Selection Task Group (PSTG) could find no documentation as to the basis for the current 24 inch criteria. The change to 12 inches is consistent with AASHTO Standard Specifications for Construction.

2. Adjust Allowable Depth of Cover for Plastic Pipe to Match AASHTO LRFD Specifications Approved at the 2000 Annual Meeting of the AASHTO Standing Committee on Bridges and Structures

Proposed Specification Change

Change the current specifications for 12 to 24 inch plastic pipe to allow depths of cover consistent with LRFD Specifications passed by AASHTO's Standing Committee on Bridges and Culverts. The new specifications are wall thickness and profile dependent, and will require separate calculations for each manufacturer. A qualified products list will be established to prevent usage of a manufacturer's product beyond the calculated depths for their specific wall profiles.

Implement a pilot program to allow for addition of Class 2 installations outside the influence of pavement only and up to a maximum of 5000 feet for PE pipe, and 5000 feet for PVC. This will be accomplished on multiple projects with sewer or culvert lengths of 300 to 500 feet per project. Upon installation of the pilot 5000 feet, establish a monitoring program for the installations to require mandrel testing and video taping of at least 25 percent of the locations by both lineal footage and by location two years after installation to assure the pipe is performing as intended. (This may result in more than 25 percent of the installations being monitored.) Upon satisfactory performance, determine if expanded use is warranted. Require industry to provide both hand calculation and computer spreadsheets according to LRFD specifications.

Industry has also requested that they be allowed under the pavement for depths of cover of one to three feet. The PSTG does not support this proposal. MDOT has had past performance problems where the depth of cover was less than three feet.

3. Addition of 30 and 36 Inch Pipe to Standard Specifications

Proposed Specification Change

Allow for driveway culverts as standard specification.

For other culvert and sewer locations, conduct a pilot program to allow for Class 1 installations (three to ten feet of cover) until at least 2500 feet has been placed in the ground. The department will then review the installations and determine if expanded use is warranted.

4. Durability for Polymeric Coated Pipe

Issue

The Corrugated Metal Pipe Association has long promoted the durability of the polymeric coated galvanized metal pipe. Research has predicted the add-on life of polymeric coating to be up to 80 years for abrasion levels 1, 2, and 3, which well represents the abrasion risks in Michigan. Michigan's test installation has performed exceptionally well for the 23 years it has been in place.

Proposed Specification Change

Change the added life for polymeric coated galvanized pipe from 20 to 40 year added life. This change is based on the 23 year old installation in the U.P. where basically no deterioration in coating has occurred, and national research based on other state installations that provides up to 80 years of added life. This change would allow 16 gauge polymeric coated pipe for culverts and sewers. This would be for lock seam pipe only, riveted pipe is not allowed. We will need to develop a qualified products list and approval procedure for the polymeric coatings.

Approval was given for this pipe when located outside the influence of pavement only. Approve as a pilot program and install 5000 feet of 12 to 24 inch pipe. Upon installation of the pilot 5000 feet, establish a monitoring program for the installations. Monitoring will require videotaping of at least 25 percent of the locations both by lineal footage and location two years after installation to assure that the pipe is performing as intended. This may result in more than 25 percent of the installed footage being monitored. Upon satisfactory performance determine if expanded use is warranted.